

REMARKS

Claims 1-19 remain in this application. Claims 1 and 18 have been amended. By these amendments, no new matter has been added.

The Examiner rejected Claim 18 under 35 U.S.C. § 112 as being indefinite for failing to point out and distinctly claim the subject matter which applicants regard as the invention. This rejection is respectfully traversed. Per the Examiner's suggestion, Applicants have amended Claim 18 to depend on Claim 17. It is respectfully submitted that Claim 18 is now allowable, and this rejection should be withdrawn.

Before addressing the merits of the rejection based on prior art, a brief description of the present application is provided. The present invention relates to lightweight rigid structural panels such as are used for interior walls, floors, doors in aircraft, and more particularly to such panels as are designed to resist ballistic impacts from bullets, shrapnel, and like objects. Prior art aircraft structural panels have not been available for resisting destruction and penetration by ballistic objects such as bullets and shrapnel, or for resisting deformation from high force/low speed attack by objects such as battering rams, knives, cutting tools, and pry-bars. At the same time, prior art ballistic protection materials used in other applications are too heavy, flexible, and/or expensive to be well suited for constructing walls and doors in passenger aircraft.

The present invention is capable of use like prior art structural panels, yet it resists penetration by ballistic objects or by sharp cutting objects while maintaining high rigidity and strength against high force/low speed attacks. The present invention is made up of a panel core including a plurality of sheets of flexible, high-tensile strength fabric interleaved with a plurality of sheets of a thermal-fusible film adhesive, and a sheet of cushioning material adhered to the plurality of sheets of flexible, high-tensile fabric. Fiber reinforced face skins are adhered to exterior surfaces of the panel core for structural strength and rigidity. In an embodiment of the invention, a hardened layer, such as a stainless steel mesh, is adhered to an outer surface of the face skin facing

the passenger cabin, to provide resistance to cutting by sharp objects. In another embodiment, to enhance resistance to attack by motorized cutting tools, one or more layers of gummy resin may be laminated to or within other layers in the panel core.

The Examiner rejected Claims 1-12 and 14-16 under 35 U.S.C. § 103(a) as being unpatentable over Fingerhut in view of Dickson. Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Fingerhut in view of Dickson, and further in view of Bachner, Jr. Claims 17 and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fingerhut in view of Dickson and further in view of Dunbar or Goerz. Claim 19 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Fingerhut, in view of Dickson, and further in view of Hollis. All of these rejections are respectfully traversed.

Fingerhut discloses a explosion resistant aircraft cargo container with flexible side walls and reinforced seams along the frame where the side walls are connected. (Col. 2, lines 22-30.) Side panels of the container are comprised of a plurality of explosion resistant sheets bonded together by at least one layer of adhesive film. (Col. 3, lines 29-32, 40-46.) Optionally, padding material, insulation or other material may be placed between layers of explosion resistant sheets. (Col. 7, lines 54-58.)

Dickson et al. discloses a laminated ballistic panel with about half of its thickness made up of lower tensile strength "E" glass filaments on the face side of the panel with the remainder of the thickness made up of higher tensile strength "S" glass filaments. Dickson's ballistic armor laminate is a formable armor panel formed of a resin matrix reinforced by E glass and S glass fabrics, for disposing over articles of various shapes, such as helmets or riot shields. (Col. 2, lines 12-20.) Dickson addresses the problem of meeting military ballistic acceptance tests at a lower cost than panels made solely of higher tensile strength (and higher cost) "S" glass filaments. (Col. 1, lines 30-39; col. 2, lines 21-24.) Dickson fails to disclose any combination of a ballistic panel with a cushioning layer.

To establish a prima facie case of obviousness, the prior art references, when

combined, must teach or suggest all of the claim limitations. See MPEP § 2142. The Applicants submit that no prima facie case of obviousness has been established here because the structural panel of the present invention includes limitations that are not present in the cited prior art.

The Examiner has indicated that the cushioning material of the present invention is equivalent to the insulation or padding disclosed in Fingerhut. Applicants respectfully submit that the cushioning material of the present invention, as defined by Claim 1, is not disclosed by Fingerhut. In particular, Fingerhut fails to disclose or suggest:

a sheet of cushioning material adhered to the plurality of sheets of flexible, high-tensile strength fabric to form a panel core, wherein the cushioning material is configured to maintain structural integrity of the rigid panel after a ballistic impact, but allows local deformation of the plurality of sheets of flexible, high tensile strength fabric near the ballistic impact;

as defined by Claim 1. Instead, Fingerhut discloses the use of flexible panels for side walls of the container, thereby teaching away from the use of a cushioning material as a structural element for maintaining the integrity of a rigid panel. Dickson, for its part, also fails to disclose or to suggest these limitations. Dickson also teaches away from the use of rigid face panels, or any combination of face panels with a cushioning core to form a rigid structural element, by disclosing use of flexible armor panels. (Col. 2, lines 55-57.) Thus, the examiner has not established a prima facie case of obviousness, because the prior-art references do not disclose all of the limitations claimed in the present invention. Not only so, but the references themselves teach away from any combination of the type proposed by the Examiner. These rejections should therefore be withdrawn.

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Therefore, Claim 1 is in condition for allowance, and Claims 2-19 are allowable as depending from an allowable base claim. In view of the foregoing, the Applicants respectfully submit that Claims 1-19 are in condition for allowance. Reconsideration and withdrawal of the rejections is respectfully requested, and a timely Notice of Allowability is solicited.

To the extent it would be helpful to placing this application in condition for allowance, the Applicants encourage the Examiner to contact the undersigned counsel and conduct a telephonic interview.

While the Applicants believe that no fees are due in connection with the filing of this paper, the Commissioner is authorized to charge any shortage in the fees, including extension of time fees, to Deposit Account No. 50-0639.

Respectfully submitted,



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Brian M. Berliner
Attorney for Applicants
Registration No. 34,549

O'MELVENY & MYERS LLP
400 South Hope Street
Los Angeles, CA 90071-2899
Telephone: (213) 430-6000